BEFORE THE ARIZONA CORPORATION COMMISSION

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IN THE MATTER OF THE COMPETITION IN THE PROVISION OF ELECTRIC SERVICES THROUGHOUT THE STATE OF ARIZONA.	DOCKET NO. U-0000-94-165 **NOTICE OF FILING**

Staff hereby files its summary of the Systems and Markets Task Force meeting held on April 3, 1995 in the above-captioned docket.

RESPECTFULLY SUBMITTED THIS 8th DAY OF MAY, 1995.

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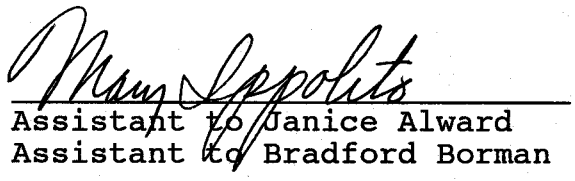

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SUMMARY OF

THE SYSTEMS AND MARKETS TASK FORCE MEETING

(Working Group on Retail Electric Competition)

APRIL 3, 1995

Docket No. U-0000-94-165

Utilities Division
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SUMMARY OF TASK FORCE MEETING ON SYSTEMS AND MARKETS APRIL 3, 1995

On March 3, 1995 the System and Markets Task Force of the Retail Competition Working Group conducted its first meeting. The Task Force identified operational paradigms, or models, that may evolve under different regulatory scenarios. To discuss the models in greater detail, the Task Force divided into two subcommittees. The subcommittees met on April 3, 1995, to discuss how different models would be implemented and to identify the advantages and disadvantages of each model. Participants at the Task Force meetings are listed in Attachment 1. This report summarizes the discussions about the different operational paradigms.

How the market is ultimately structured will depend upon whether retail competition is sanctioned by regulators and to what extent. Three types of regulatory frameworks were considered: encourage retail competition, allow retail competition in limited market segments, or discourage retail wheeling but encourage efficiency and wholesale competition. Box A lists the types of operational paradigms that could develop under these regulatory frameworks.

Retail Competition is Encouraged
- Vertically Integrated Utilities, Bilateral Contracts Model
- Vertically Integrated Utilities, Flexible Poolco Model
- Vertically Integrated Utilities, Exclusive Poolco Model
- Divested Utility Model

Limited Retail Competition is Allowed
- Bilateral Contracts Model
- Poolco Model

Retail Competition is Discouraged
- Regulatory Incentives Model

Box A: Operational Paradigms

Operational Models When Retail Competition is Encouraged

If retail competition is encouraged and utilities remain vertically integrated, the market is described as one in which electricity generation is competitive, but transmission and distribution systems are not competitive. Descriptions of the types of markets that might function in this environment follow.

Utilities Remain Vertically Integrated, Bilateral Contracts Model

With bilateral contracts, consumers would have direct access to the generators of their choice and would have to obtain transmission, distribution, and reliability services as well. Energy portfolio managers could package these various services on behalf of consumers or individual consumers may act as their own energy portfolio managers. New hardware and software technologies may be required to facilitate transactions. For example, new metering technologies may be required to instantaneously match capacity supplies with customer needs.

System Operation: Transactions would occur through negotiated or standard contracts between buyers (consumers or energy portfolio managers) and sellers (utilities, market brokers, or independent power producers). Otherwise system operation would be similar to today's system (but generation, transmission, and distribution services could be unbundled). A host utility could control system operations, schedule generation, and provide transmission and distribution services. All consumers, or their agents, would have the opportunity to access the transmission system. The host utility would have an obligation to connect consumers.

Power Pricing: Prices, terms, and conditions would be negotiated and could vary from case to case. Ancillary services could be purchased in a competitive market for those services. However, distribution and transmission still would be regulated. New accounting procedures would have to be established for unbundled service revenues and associated costs.

Settling Imbalances: Imbalances could be settled through contractual provisions such as a penalty clause when power consumption falls outside of some pre-specified range. Also, imbalances could be handled through separate load following services. For example, utilities could provide a load following service for customers whose loads are in excess of base loads served by an independent power producer. Imbalances would be settled with the consumer, in dollars or energy, through an accounting mechanism. Real time metering would be required to monitor usage and to provide a dynamic signal so that customers could shed load when necessary.

Generation Construction and Operation: Construction decisions would be up to suppliers and the market would determine generation needs. For example, independent power producers would determine when to add capacity and what type to add. In order to obtain financing for new generating capacity and to improve the chances of covering long run marginal cost, generators may have to sign long term contracts with purchasers for the output before construction begins.

The host utility may not be responsible for generation in general. Other service providers could provide back-up services, for example. Some percent of generation could be committed for reliability, the costs of which might be included in a demand charge.

Transmission Construction, Operation, Pricing and Access: Transmission construction could be market driven. However, transmission would likely remain monopolistic and pricing and access would likely be regulated by the Federal Energy Regulatory Commission (FERC). Reliability could be regulated by the industry. Significant coordination would be needed in construction and operation of transmission systems.

Consumers or energy portfolio managers would contract with the transmission system operators for delivery. Technology developments, such as devices that help to control power

flows and sophisticated metering and communication equipment, are making it possible for transmission access to be available to all consumers. But the cost may be high for smaller consumers, such as residential consumers, and access may be prohibitively expensive in such cases.

System Reliability: Two components of system reliability were identified: (1) generation reliability, and (2) transmission and distribution reliability. Some members of the Task Force believe that host utilities would set criteria and be responsible for operating the system in a reliable manner and would provide ancillary services, such as spinning reserve and reactive power, for a fee. Utilities and energy portfolio managers would be responsible for providing reliability as demanded in the market. Alternatively, voltage support, spinning reserve, and other reliability assurance measures may be provided through reliability service companies, subject to industry regulation (e.g. coordination by the North American Electric Reliability Council).

Some members felt that the ultimate responsibility for planning and reliability under this scenario is uncertain. A multiplicity of contracts could create complexities, which currently are not fully understood, in managing the system and its constraints.

Advantages of a Bilateral Contracts Model:

With bilateral contracts in a competitive market, generation, transmission, and distribution would build upon today's utility systems. The distribution system would remain as a natural monopoly. In addition:

- Increased economic efficiency could result from increased competition; for example, competition could foster innovations that increase production and reduce costs, and system planning also may improve as it becomes more demand driven.
- The bilateral contracts model would allow choices in the reliability of power delivered and price.
- Where the technology and information exist, some consumers would have lower prices and more choices among suppliers.
- Cross-class subsidies, if any, could be reduced as costs and prices of services become more closely correlated.

Disadvantages of a Bilateral Contracts Model:

- Efficiency gains may benefit only some consumers.
- Forecasting, planning, and outage maintenance planning would be more difficult.
- Extensive and expensive metering would be required. The metering technology is not available yet to implement this model on a large scale.
- This model may be less reliable in responding to abnormal conditions that require

system recovery or in normal day-to-day operation.

- The transaction costs of negotiating and enforcing numerous special contracts among buyers and sellers and among various providers of reliability services and energy portfolio managers could be much higher than parallel costs internalized within utilities today; these transaction costs include expertise needed to develop and implement contracts, manage risks, develop standards, and implement metering and electronic bulletin boards for information on transmission capacity, transactions, and possibly spot market activity, etc.

Other Comments:

Energy prices would be an important factor in determining who a consumer buys from. The amount of reliability provided would be based on customer preferences. Utilities would require flexible plans to compete. To obtain financing for new projects, suppliers would need long-term contracts (5 or more years).

The traditional cost-plus rate making approach will change. Costs may be more directly assigned to consumer groups. Also, consumers will need to be notified and informed about their new choices.

A number of questions remain unanswered: Who sets the standards for communication (real time) metering? Who protects consumers? Are exit and entry rules and customer retention procedures market determined? Would an entity have to have a Certificate of Convenience and Necessity? Who is the provider of last resort? Who would regulate possible environmental changes? To a great extent, these issues are addressed by the other Task Forces.

Utilities Remain Vertically Integrated, Flexible Poolco Model

The Federal Energy Regulatory Commission[1] described a Poolco as follows:

> [T]he poolco would be an independent entity that would not own any (or would own only a limited number of) facilities, but would control the operation of some or all generators, and all transmission facilities, in a region. The poolco would be open to all generators connected to the grid, who would automatically receive any transmission service needed to sell power into the regional pool. In effect, the poolco would be responsible for creating and maintaining a regional spot market for electricity. The spot price in each trading period (perhaps hour-by-hour) would be readily available and made known to all market participants.

[1] Federal Energy Regulatory Commission. "Inquiry Concerning Alternative Power Pooling Institutions Under the Federal Power Act." 18 CFR Chapter I (October 26, 1994), pp. 5-6.

> Generating resources would be centrally dispatched on an hourly basis by the poolco in much the same way as in current power pools. The principal difference appears to be that generators would be dispatched based on the bid price they submit to the poolco, rather than on their running costs. The poolco would operate a least-cost (in the sense of lowest bid) dispatch that accounts for any transmission constraints in the same manner as an existing power pool or a single utility dispatch center....
>
> In effect, the poolco would become the market clearinghouse for the hourly energy market.

The flexible Poolco allows for bilateral transactions and spot market options on Poolco prices. Because of the potential for monopoly control of transmission and distribution access and pricing, transmission and distribution would be regulated.

System Operation: Current system operations could be maintained, with the Poolco as another source of power. The Poolco would serve as an objective (or neutral) system operator, and may be regulated by either government or the industry to ensure neutral operation. It would coordinate power production by generators and coordinate sales to users at a market clearing price. A spot market could be created for hourly, or day-ahead electricity prices based upon highest bid price (which provides an incentive for low price bidding). Generation construction would be market driven but generation and transmission planning would have to be coordinated. Utilities may be responsible for maintaining system reliability, but other companies may also provide reliability services.

Power Pricing: Prices could be established via negotiated prices of bilateral agreements or through the spot market. Market prices would depend upon the time of day and the delivery point. This model would provide more market knowledge about spot prices than would the bilateral contracts model.

Transmission Construction, Operation, Pricing, & Access: Construction of transmission systems would be market driven. FERC would govern transmission access and pricing. Open access to all consumers could create loop flow problems.

Advantages of the Flexible Poolco Model:

A flexible Poolco would provide an additional supply resource which may have a broad array of suppliers. This model would incorporate benefits of both bilateral and short-term markets. Consumers would have a choice of energy suppliers, and generators would have the choice to bid capacity to the pool or to sell outside the pool. Also, more market knowledge would be available about market clearing prices, relative to the bilateral contracts model. The

Poolco spot price could provide a benchmark, short-term price for bilateral contracts.

Disadvantages of the Flexible Poolco Model:

- Poolco bidding rules may create inefficiency, resulting in gaming in bidding behavior. The Poolco bulletin board also may be inefficient in design.
- Regulators and consumers in low cost regions might not want their utilities to bid into the pool because prices in their region might go up.
- Dislocations of cheap power may overload those lines with access to cheap power and reduce transmission reliability.
- Transition costs would include additional costs of hardware, computer software, metering, and educating the public.
- Better informed buyers and sellers may profit at the expense of poorly informed buyers or sellers due to information asymmetries in the bilateral contracts segment of the market.
- Integrated resource planning may become more complex or disappear.
- Dispatch may not be efficient because the entire system is not centralized for economic dispatch (however, some members argue that the market will provide incentives for efficient dispatch).

Other Comments:

- Generators would be unlikely to build new capacity without long term contracts.
- A flexible Poolco model assumes that the market will provide the optimum level of reliability.
- Energy portfolio managers could offer retail services.
- There is uncertainty about jurisdictional issues, such as FERC control of prices in the pool.
- The price of transmission might not equal marginal cost due to price caps instituted by FERC.

Utilities Remain Vertically Integrated, Exclusive Poolco Model

An independent system operator controls all power transactions, where all generators sell to the system operator and all purchasers buy from the system operator. All generators and purchasers present offers to the system operator and the system operator sorts bids to determine which generators to run and which consumers obtain electricity. The price of energy is determined in this marketplace. Transmission and distribution services would probably be regulated to limit monopoly abuses.

System Operation: In this model, energy at any time is viewed as a standard homogenous commodity. Implementation of the Poolco would require the development of new dispatch and contractual arrangements. Everyone could be their own energy portfolio manager, but energy portfolio managers could represent numerous consumers. Separate financial contracts would be allowed, such as contracts for differences or hedging instruments.

The Poolco would prepare short-term load forecasts, dispatch power, and assume the obligation to serve, to the extent that such an obligation exists. Generation needs and system reliability would be market driven. System reliability would be more complex than the current system, due to the increased number of transactions (however, it may be simpler than the bilateral contracts model).

Power Pricing Electricity at a given hour would be regarded as a standard homogenous commodity with a standard price, which would be the market clearing price. There could be three parts to a customer's electricity bill: (1) energy costs from the Poolco via the generator (these costs would be unregulated), (2) transmission costs (regulated by FERC), and (3) costs of distribution services from the host utility (regulated by the Commission). Prices could be more volatile in this model relative to other models, and hedging instruments, including derivatives, probably would be used to manage price risks. It is uncertain how existing long term contracts would be treated.

Transmission Pricing: Transmission prices would be set according to FERC, and customers and generators would pay a fee to the Poolco for transmission access. Local distribution pricing would be regulated by the Commission.

Retailing: Marketing would probably become more creative in order for service providers to differentiate their services. The industry could become more service oriented once electricity becomes a homogenous product. Energy services and demand side management could differentiate providers. For example, one service provider may specialize in reliability, where another provider specializes in DSM and cost reduction techniques. Furthermore, energy services may become more valued by some consumers.

Advantages of the Exclusive Poolco Model:

Under the exclusive Poolco model, all consumers or their agents would know the market price at each hour. In addition, power would be dispatched in order of bid (cheapest first), subject to restrictions on transmission.

Disadvantages of the Exclusive Poolco Model:

By eliminating bilateral contracts, consumers will have diminished choice. Prices could

be more volatile, and some cost shifting could occur among consumers.

Transitional costs to implement this model would include costs of setting up the Poolco. In addition, overhead costs may increase due to the increased complexities of system operation.

Bidders in the Poolco may game their bids. Also, bidding would be heavily dependent on short run marginal cost, which could make investments in new generating capacity very risky.

Other Comments:

Society would need to become educated about the new system and risk management strategies. Consumers could customize the purchase of electricity to meet their needs through energy portfolio managers. For example, energy portfolio managers could develop different packages of generation, transmission, and distribution services and offer various price hedges for consumers.

There may not be enough generation to create an Arizona specific Poolco, and the pool may have to be expanded beyond state boundaries to have sufficient bidders.

Utilities Divest Generation and Possibly Transmission Facilities

With divestiture, the market becomes segmented by function and generation companies are expected to operate in a competitive environment. Under this scenario, the following market sectors could develop.

Poolco: As previously described, a Poolco is a regulated system operator that forms a spot market for short-term sales and coordinates power deliveries. Generators and consumers may also be able to execute bilateral contracts in lieu of Poolco purchases and sales.

Genco: Generating companies that purchase, lease, construct, operate, and maintain power plants.

Transco: Companies that purchase, lease, construct, operate, and maintain transmission facilities.

Disco: Companies that construct, operate, and maintain the local distribution wires.

Retailco: Retail companies or energy portfolio managers that provide electricity and energy services to end users, obtaining or coordinating the necessary energy, power, transmission, distribution, and reliability services to make retail sales.

System Operation: Some type of system coordinator must be created that would coordinate the entire synchronous system. Transmission cannot be balanced if separate control areas exist for generation and transmission. Voltage maintenance and synchronization would be required for both generation and transmission.

Power Pricing Energy pricing would be market based. However, large consumers could engage in bilateral contracts. High cost load following services may be sold at high price.

Generation Construction & Operation: Generation needs would be determined by the market and construction would be managed by a Genco. Generation companies must work together with transmission companies, and vice versa for planning.

Retailing: Consumers would have to assemble their own packages of generation, transmission, and distribution services and develop their own price hedging arrangements. Energy portfolio managers could perform these services or the services could be performed by distribution companies. However, distribution companies could simply be common carriers without any retailing functions.

Advantages of a Divested Utility Model:

A principal reason for divestiture is that the incentive for utilities to impede access to their transmission systems to inhibit competition would be eliminated; thus, consumers would have free market choices of suppliers. In addition, incentives for efficiency gains would be created by unbundling services into profit centers. Cross subsidies among generation, transmission, and distribution would be removed (however, some members of the group regard the removal of cross subsidies as a disadvantage). Efficiency also would occur through economic dispatch. Finally, the divestiture of indebted assets could improve utility debt structures.

Disadvantages of a Divested Utility Model:

- The divestiture of utility assets would require consideration of several major legal issues (which will be addressed by the legal subcommittee of the Regulatory Task Force).
- Utilities may strongly resist divestiture.
- The treatment of existing contracts is uncertain, and those bound to the terms of existing contracts may be at a disadvantage.
- Inefficiencies could result from the loss of traditional coordination of generation, transmission, and distribution services. Also, there is a possible loss of economies of scale. Certain functions could be duplicated increasing general, administration, and marketing costs. The increased transaction costs of dealing with many suppliers of generation, transmission, distribution, and retailing services may be

greater than any cost reductions due to increased competition.

Other Comments:

Generators would need to recover long run marginal costs. In this model generation companies may face greater risk than transmission or distribution companies.

Operational Models When Limited Retail Competition is Allowed

This option provides for competition for only some consumers, such as large industrial consumers or consumers over a specified level of MW demand.[2] In an environment that limits competition and, thus, limits direct access to generators, several task force members agreed that a bilateral contracts model or a Poolco model could emerge, but these models would reflect the constraints on direct access. Thus, the previous discussions of bilateral contracts and Poolco models generally apply when limited retail competition is allowed. Extensive metering may not be required and voltage control may remain each utility's responsibility when retail competition is limited.

Operational Model When Retail Competition is Discouraged

When retail competition is discouraged, the market would not change substantially from the situation today. However, to attain the efficiencies expected from competition, regulators and utilities would pursue greater wholesale competition and pricing mechanisms that simulate, to some extent, a competitive market. Regulators, for example, might allow flexible pricing in some circumstances and might base rates on utility performance and market price indicators instead of on historically incurred costs. These topics will also be addressed by the Regulatory Task Force.

System Operation: System operations would remain virtually the same as today, with the exception that regulatory incentives would be provided for efficient operations. The Commission could provide incentives for system reliability. Utilities would have the obligation to serve and would continue to plan to operate within environmental constraints.

Power Pricing: Incentive based rate making could be adopted by the Commission to encourage utilities to keep prices competitive. Examples of incentive based rates are price caps, performance based rates, and rates linked to price indices. Competition also could be simulated through real time pricing. In addition, the Commission could allow flexibility in contracting and in repackaging services (including price, terms, and DSM). The Commission could allow prices

[2] An energy portfolio manager might meet the MW minimum by aggregating the demand of multiple smaller consumers.

to be de-averaged so that prices reflect the costs to serve each type of customer. Services may be unbundled and priced separately. Buy-throughs, similar to the North Star Steel arrangement, may become more prevalent.

Advantages of Regulatory Incentives Model:

- Incentives could result in cost reductions and create some consumer choices.
- Benefits would be system wide, not just to individual consumers.
- No new capital would be required to implement this model.
- Transition costs would be minimized.
- Utilities would have a longer run view for planning.
- System reliability, DSM, integrated resource planning, renewables, and low income programs would be maintained.
- Less equipment would be needed for monitoring individual contracts relative to other models.
- Planning would be more certain and less complex; this scenario would have lower risks relative to the other scenarios.

Disadvantages of Regulatory Incentives Model:

- Potentially greater benefits under competition would be forgone.
- Prices may not be market based and consumers would not be able to benefit from shopping around for services, except for purchases of distributed energy services such as on-site cogeneration or buy-throughs.
- There is a potential for price discrimination with buy-throughs since not all customers may be eligible for buy-throughs.
- This model may foster a lot of special contracts which could become cumbersome to regulate.

Other Comments:

To cut costs, utilities could: look for cheaper wholesale supplies; build on-site generation for their customers; use price indices as benchmarks (for example, use cheap utilities to benchmark cost objectives, or use marginal costs of generic power plants as benchmarks); rethink and reorganize objectives; create functionally based profit centers; reduce capital investments; improve power plant operations; reduce carrying charges on inventories; and reduce debt service.

The Commission could enhance utility competitiveness by providing more streamlined reviews of utility filings.

Attachment 1
Participants in March and April 1995 Systems and Markets Task Force Meetings

Type of Business	Organization	Names
Government Agencies	Arizona Corporation Commission	David Berry, Kim Clark, Ray Williamson, Prem Bahl
	Arizona Energy Office	Brian Fellows
	City of Phoenix	Bill Murphy
	Residential Utility Consumer Office	Dale Leavesley
Utilities	Arizona Public Service Co.	Barbara Klemstine, Vicki Sandler, Cary Deise, Ajit Bhatti
	Citizens Utility Company	Michael Newton
	Navopache Electric Cooperative	Kent Rhoton
	Plains Generation & Transmission	Ken Wofford
	Salt River Project	Marty Sedler, John Underhill, Charlie Duckworth, Jacqi Borrego
	Southwest Gas Corp.	Wally Kolberg
	Sulphur Springs Valley Electric Coop.	Gordon Sloan
	Tucson Electric Power Co.	Mike Raezer
Industry	Arizona Association of Industries	Phil Sarikas (Intel), Jeff Sutherland (Honeywell)
	Magma Copper Company	Joe Eichelberger
	Phelps Dodge	Choi Lee
Other Parties	Arizona Community Action Assoc.	Jacque Moore
	Arizona Power Pooling Association	Charles Reinhold
	Brown & Bain	Lex Smith
	Diné Power Authority	Troy Tsosie
	Electric Clearing House	Dan Austin
	Fennemore Craig	Timothy Berg
	IBEW	Joe Carl (Local 1116), Bill Turner (Local 570)
	Nordic Power	Andy Baardson
	Resource Management Inc.	Alan Propper, Chuck Baudo
	R.W. Beck	Kenneth Bagley
	Vision Power Service	Mike Rowley